

We claim:-

1. The process for spray polymerization in an inert atmosphere of a monomer solution comprising free-radically polymerizable monomers when the water content of the monomer solution is at least 55% by weight.
- 5 2. The process according to claim 1 when the water content of the monomer solution is at least 65% by weight.
- 10 3. The process according to claim 1 when the water content of the monomer solution is at least 70% by weight.
4. The process according to any of the aforementioned claims when the reaction temperature is in the range from 90 to 300°C.
- 15 5. The process according to any of the aforementioned claims when the free-radically polymerizable monomer is acrylic acid and/or methacrylic acid.
6. The process according to claim 5 when the acrylic acid and/or methacrylic acid is at least 40% neutralized.
- 20 7. The process according to any of claims 1 to 4 when the free-radically polymerizable monomer is a mixture of acrylic acid and potassium acrylate.
- 25 8. Water-swellable polymers obtainable according to a process as per claims 1 to 7.